

# Reduction in Mental Health Treatment Utilization Among Transgender Individuals After Gender-Affirming Surgeries: A Total Population Study

Richard Bränström, Ph.D., John E. Pachankis, Ph.D.

**Objective:** Despite professional recommendations to consider gender-affirming hormone and surgical interventions for transgender individuals experiencing gender incongruence, the long-term effect of such interventions on mental health is largely unknown. The aim of this study was to ascertain the prevalence of mood and anxiety disorder health care visits and antidepressant and anxiolytic prescriptions in 2015 as a function of gender incongruence diagnosis and gender-affirming hormone and surgical treatment in the entire Swedish population.

**Methods:** This study used the Swedish Total Population Register (N=9,747,324), linked to the National Patient Register and the Prescribed Drug Register. Among individuals who received a diagnosis of gender incongruence (i.e., transsexualism or gender identity disorder) between 2005 and 2015 (N=2,679), mental health treatment in 2015 was examined as a function of length of time since gender-affirming hormone and surgical treatment. Outcome measures were mood and anxiety disorder health care visits, antidepressant and anxiolytic prescriptions, and hospitalization after a suicide attempt.

**Results:** Compared with the general population, individuals with a gender incongruence diagnosis were about six times as likely to have had a mood and anxiety disorder health care visit, more than three times as likely to have received prescriptions for antidepressants and anxiolytics, and more than six times as likely to have been hospitalized after a suicide attempt. Years since initiating hormone treatment was not significantly related to likelihood of mental health treatment (adjusted odds ratio=1.01, 95% CI=0.98, 1.03). However, increased time since last gender-affirming surgery was associated with reduced mental health treatment (adjusted odds ratio=0.92, 95% CI=0.87, 0.98).

**Conclusions:** In this first total population study of transgender individuals with a gender incongruence diagnosis, the longitudinal association between gender-affirming surgery and reduced likelihood of mental health treatment lends support to the decision to provide gender-affirming surgeries to transgender individuals who seek them.

*Am J Psychiatry* 2020; 177:727–734; doi:10.1176/appi.ajp.2019.19010080

Numerous studies indicate that transgender individuals—that is, individuals who experience incongruity between their sex assigned at birth and their current gender identity—are at particular risk of psychological distress and associated impairment (e.g., suicidality) (1–3). This elevated risk is hypothesized to stem at least in part from transgender individuals' elevated exposure to stigma-related stress, also known as minority stress (4, 5), and it can also result from the stress associated with a lack of gender affirmation (i.e., the accurate recognition and validation of one's gender identity) (6). ICD-11 (7) specifies that individuals experiencing persistent discordance between their experienced gender and their assigned sex meet diagnostic criteria for gender incongruence.

To alleviate the stress of persistent discordance between experienced gender and assigned sex, an increasing number of

transgender individuals who experience gender incongruence seek gender-affirming medical interventions, including hormone replacement therapy and gender-affirming surgeries (8). The World Professional Association for Transgender Health's *Standards of Care for the Health of Transsexual, Transgender, and Gender Nonconforming People* recommends consideration of these interventions for affirming transgender individuals' gender and alleviating gender-related stress (9).

Despite professional recommendations to consider gender-affirming medical interventions for transgender individuals who experience gender incongruence, the effect of such interventions on long-term mental health is largely unknown. Available evidence stems mainly from small samples utilizing cross-sectional designs and self-reported treatment exposures and mental health outcomes (2, 10, 11). A meta-analysis

See related feature: **Editorial** by Dr. Mueller (p. 657)

that aggregated data across nearly two dozen small-sample studies (10), mostly relying on cross-sectional designs, found positive associations between self-reports of receiving both hormone therapy and gender-affirming surgery and mental health. Several more recent uncontrolled studies of the effects of hormone replacement therapy on transgender individuals' mental health have found that transgender individuals' mental health improved for up to 24 months after initiating hormone therapy (11, 12).

Because of previous studies' limitations, including short assessment periods and the fact that existing probability-based surveys do not routinely assess transgender status or other aspects of gender diversity, insufficient evidence exists regarding associations between length of time since receiving gender-affirming interventions and treatment for psychiatric disorders among the transgender population. In fact, no probability-based evidence exists regarding even the prevalence of mood and anxiety disorder treatment among transgender individuals compared with the general population (1).

The limitations of previous research in terms of non-representative sampling, self-reported measurement, and limited follow-up periods can be overcome with national health registry data sets that include clinician-derived assessment of gender incongruence and complete records of psychiatric and gender-affirming treatment and utilization data in an entire population. In the one known study to use a population-based design to investigate psychiatric morbidity among transgender individuals (N=324), individuals who had legally changed their gender and had a diagnosis of gender incongruence associated with an inpatient hospital visit in Sweden between 1973 and 2003 were at higher risk of suicide attempts, suicide-related mortality, and psychiatric hospitalization compared with age- and reassigned-gender-matched controls (13). The study did not report the prevalence of mood and anxiety disorder treatment among those receiving gender-affirming treatment compared with the total population or as a function of length of time since receiving gender-affirming treatment. Furthermore, the proportion of individuals receiving gender-affirming treatments in Sweden has increased nearly exponentially since 2003 (8, 14). Similar recent increases in referrals for gender-affirming treatments have been reported in other countries around the world (15–18).

In this study, we took advantage of the Swedish Total Population Register (19), linked to the Swedish National Patient Register and the Swedish Prescribed Drug Register, to ascertain the prevalence of mood and anxiety disorder health care visits, antidepressant and anxiolytic prescriptions, and hospitalization after a suicide attempt among the entire Swedish population as a function of gender incongruence diagnosis, gender-affirming hormone and surgery utilization, and length of time since receiving gender-affirming treatments. This data set permitted identification of all individuals in Sweden seeking gender-affirming treatments between January 1, 2005, and December 31, 2015. Although not all transgender individuals seek gender-affirming treatments

and not all treatment-seeking transgender individuals meet diagnostic criteria for gender incongruence, findings from this unique data opportunity have timely implications for documenting the mental health of transgender individuals seeking gender-affirmative treatment and ways in which the medical profession can support this increasingly visible population.

## METHODS

This total population prospective study included all individuals living in Sweden on December 31, 2014, as identified in the Swedish Total Population Register. Using de-identified personal identification numbers (a unique number assigned to all Swedish residents), we linked sociodemographic information with National Patient Register information on health care usage between January 1, 2005, and December 31, 2015, and Prescribed Drug Register information on prescribed and purchased medication between July 1, 2005, and December 31, 2015. The study was approved by the Regional Ethics Committee in Stockholm (no. 2017/1736–31).

### Gender Incongruence Diagnosis

Using the Swedish National Patient Register, we classified all individuals in Sweden according to whether they had received a diagnosis of gender incongruence, as defined by the diagnostic system applied in Sweden during the study period (i.e., a diagnosis of either transsexualism [ICD-10 code F64.0] or gender identity disorder [ICD-10 codes F64.8, F64.9]) during an inpatient or specialized outpatient visit between January 1, 2005, and December 31, 2015. The two diagnoses used to define gender incongruence at the time of the study are not fully equivalent but capture largely overlapping populations (20). In Sweden during the study period, a diagnosis of either transsexualism or gender identity disorder was required for accessing gender-affirming treatment (e.g., gender-affirming hormone treatment, hormone-suppressing or -blocking medication treatment, mastectomy with chest contouring, hair removal, vocal cord surgery, speech therapy, genital surgery) and was given after an approximately yearlong evaluation, following a national consensus program (14, 21). Adolescents could receive the same gender-affirming treatments as adults but could not receive genital surgery before age 18 (22).

### Outcome Measures

This study's outcome measures were psychiatric outpatient health care visits, antidepressant and anxiolytic prescriptions, and hospitalization after a suicide attempt between January 1, 2015, and December 31, 2015. Restricting the outcome assessment period to one year, 2015, the most recent available, removes potential confounding by secular trends in treatment utilization and transgender acceptance and visibility. Each psychiatric outpatient visit was coded by the treating physician with a primary diagnosis from ICD-10 (23)

and up to 20 supplementary ICD-10 diagnostic codes. Using these codes, we classified all individuals as having received treatment for any or no mood disorders (codes F30–F39) or anxiety disorders (codes F40–F42). Prescribed medication use was obtained from the Swedish Prescribed Drug Register, which contains information regarding all prescribed and purchased medications nationwide for all individuals. Individuals were categorized into any use or no use of antidepressant and anxiolytic medication according to the Anatomical Therapeutic Chemical (ATC) Classification system (codes N06A and N05B). All inpatient health care visits were similarly coded by the treating physician using ICD-10, indicating a primary cause of hospitalization and up to 30 supplementary causes. Using these codes, we classified all individuals as having been hospitalized after a suicide attempt (versus not) using the ICD-10 codes for intentional self-harm (codes X60–X84).

### Covariates

Sociodemographic information was drawn from the Swedish Total Population Register in December 2014 and included current legal gender, age, country of birth, level of education, urbanicity, and household income.

### Gender-Affirming Treatment Utilization

For individuals with a gender incongruence diagnosis at any visit, we assessed the type and year of gender-affirming treatment, both hormone treatment and surgery. Information about hormone treatment, including androgen-suppressing and -blocking medication, was obtained from the Swedish Prescribed Drug Register between July 1, 2005, and December 31, 2015. All medications prescribed to individuals who had received a gender incongruence diagnosis were coded as gender-affirming if they were feminizing hormone medication (i.e., estrogens [ATC codes G03C, L02AA], progestogen [G03D]), masculinizing hormone medication (i.e., androgens [G03B]), or androgen-suppression or -blocking medication (i.e., testosterone-5-alpha reductase inhibitors [G04CB], antiandrogens [G03H], gonadotropin-releasing hormone analogues [G03GA, L02AE, H01CA], antigonadotropin-releasing hormones [H01CC], and spironolactone [C03DA01]). For each individual with a gender incongruence diagnosis who received prescriptions for any of these medications, we calculated the number of years since initiation.

Gender-affirming surgery was coded using information about all inpatient surgical procedures received by individuals with a gender incongruence diagnosis in the National Patient Register between January 1, 2005, and December 31, 2015. All surgical procedures associated with a gender incongruence diagnosis performed during this

**TABLE 1. Demographic characteristics of the Swedish population, by gender incongruence diagnosis, December 31, 2014**

Measure	Individuals Diagnosed With Gender Incongruence (N=2,679)		General Population <sup>a</sup> (N=9,744,645)	
	Mean	SD	Mean	SD
Age (years)	31.5	14.0	40.7	23.8
Mean yearly household income (Swedish kronor, 000s)	298.4	301.0	464.8	800.6
	N	%	N	%
Legal gender				
Male	1,284	47.9	4,870,930	50.0
Female	1,395	52.1	4,873,715	50.0
University education	809	30.2	2,643,505	27.1
Urbanicity				
Larger city	1,102	41.1	3,364,003	34.5
Smaller city	867	32.4	3,238,223	33.2
Rural community	710	26.5	3,142,419	32.2
Country of birth				
Sweden	2,214	82.6	8,141,590	83.5
Other European country	164	6.1	801,227	8.2
Outside of Europe	301	11.2	800,800	8.2
No information about country of birth	0	0.0	1,028	0.01

<sup>a</sup> The N for general population excludes those with a diagnosis of gender incongruence.

period were coded by type of surgery using the Nordic Medico-Statistical Committee Classification of Surgical Procedures (16): breast or dermatological chest surgery (codes H and QB), surgery of the reproductive organs (codes K and L), dermatological surgery (code Q), and laryngeal surgery (code DQ).

### Statistical Analysis

We first examined sociodemographic differences between individuals with a gender incongruence diagnosis and the rest of the population in Sweden. We then compared the prevalence of any mood and anxiety disorder treatments (i.e., psychiatric outpatient health care visits and prescribed psychiatric medication) between individuals receiving gender-affirming treatments and the rest of the population in Sweden during 2015, using logistic regression. Among individuals with a gender incongruence diagnosis, we then investigated the odds of mood and anxiety disorder treatment and hospitalization following a suicide attempt (occurring in 2015) as a function of years since initiation of hormone or hormone-suppressing treatment and since last gender-affirming surgery. We examined years since *last* gender-affirming surgery because gender-affirming surgery is often a lengthy process involving several distinct procedures before gender affirmation is attained.

All analyses were conducted using SPSS, version 24 (IBM, Armonk, N.Y.), and adjusted for current legal gender, age, country of birth, level of education, urbanicity, and household income.

**TABLE 2. Association between gender incongruence diagnosis and mood- and anxiety-related health care visits, antidepressant and anxiolytic prescriptions, and hospitalization after suicide attempt in the total Swedish population, 2015<sup>a</sup>**

Measure	Individuals Diagnosed With Gender Incongruence (N=2,679)		General Population <sup>b</sup> (N=9,744,645)		Unadjusted		Adjusted	
	N	%	N	%	Odds Ratio	95% CI	Odds Ratio	95% CI
Psychiatric outpatient visits, 2015								
Any mood disorder	250	9.3	95,137	1.0	10.44	9.16, 11.89	6.07	5.32, 6.93
Any anxiety disorder	197	7.4	63,200	0.6	12.16	10.52, 14.06	5.92	5.10, 6.86
Prescribed medication treatment, 2015								
Any antidepressant use	771	28.8	377,043	9.4	3.90	3.58, 4.24	3.95	3.62, 4.31
Any anxiolytic treatment	449	16.8	566,678	5.8	3.26	2.95, 3.61	3.43	3.09, 3.81
Inpatient visits, 2015								
Hospitalization after suicide attempt	22	0.8	7,104	0.1	11.35	7.46, 17.28	6.79	4.45, 10.35

<sup>a</sup> All analyses were conducted using logistic regression and adjusted for age, gender, education, income, urbanity, and country of birth.

<sup>b</sup> The N for general population excludes those with a diagnosis of gender incongruence.

## RESULTS

Of the total Swedish population on December 31, 2014 (N=9,747,324), 2,679 had received a diagnosis of gender incongruence between January 1, 2005, and December 31, 2015 (Table 1). Those diagnosed with gender incongruence were significantly younger on average than the rest of the population ( $t=19.94$ ,  $p<0.001$ ), and they were more likely to have a current legal female gender than male gender ( $\chi^2=4.54$ ,  $p=0.03$ ). Individuals with a gender incongruence diagnosis were more likely to have a university education ( $\chi^2=12.77$ ,  $p<0.001$ ), to have a lower household income ( $t=30.61$ ,  $p<0.001$ ), to live in a larger city ( $\chi^2=61.95$ ,  $p<0.001$ ), and to have been born outside of Europe ( $\chi^2=32.33$ ,  $p<0.001$ ).

### Mood and Anxiety Disorder Treatment Among Individuals Diagnosed With Gender Incongruence

Table 2 compares the prevalence of health care visits and medication treatment for mood and anxiety disorders between individuals diagnosed with gender incongruence and those not. In analyses adjusted for sociodemographic factors, those diagnosed with gender incongruence were about six times as likely to have had a health care visit due to a mood or anxiety disorder in 2015, more than three times as likely to have received prescriptions for antidepressant and anxiolytic medication in 2015, and more than six times as likely to have been hospitalized after a suicide attempt.

### Gender-Affirming Treatments Among Individuals Diagnosed With Gender Incongruence

Just over 70% of individuals diagnosed with gender incongruence during the follow-up period (2005–2015) had received prescriptions for hormone treatment, including androgen-suppressing and -blocking medication, during this period. Half of those treated with hormones had initiated their hormone treatment within the past 5 years (Table 3).

Nearly 40% of those with a diagnosis of gender incongruence had received gender-affirming surgical treatments during the follow-up period. Table 3 presents the types of surgical treatments and the distribution of individuals by number of years since last gender-affirming surgery. The most common types of surgical procedures were mastectomy with chest contouring, surgery of the reproductive organs, dermatological surgeries, and laryngeal surgery.

Less than a third (29%) of those diagnosed with gender incongruence had received neither hormone treatment nor gender-affirming surgery. Among those who had received gender-affirming surgery, 97% had also been treated with hormones.

### Changes in Likelihood of Mood and Anxiety Disorder Treatment After Gender-Affirming Hormone and Surgical Treatment

We examined the effect of years since hormone treatment initiation and years since last gender-affirming surgery on likelihood of having received mood or anxiety disorder treatment in 2015 among individuals with a diagnosis of gender incongruence. Among those with a gender incongruence diagnosis receiving hormone treatment, years since initiation of hormone treatment was not significantly related to likelihood of mental health treatment (i.e., psychiatric outpatient health care visits and prescribed psychiatric medication; adjusted odds ratio=1.01, 95% CI=0.98, 1.03). However, among those receiving gender-affirming surgical treatment, the risk of mental health treatment was significantly reduced with increased time since last surgical treatment (adjusted odds ratio=0.92, 95% CI=0.87, 0.97). Specifically, the likelihood of being treated for a mood or anxiety disorder was reduced by 8% for each year since last gender-affirming surgery. The number of individuals with a gender incongruence diagnosis who had been hospitalized after a suicide attempt in 2015 was low (N=22) but was also

reduced as a function of time since last surgical treatment. The association between time since gender-affirming hormone and surgical treatments and hospitalization after a suicide attempt did not reach significance (hormone treatment: adjusted odds ratio=1.12, 95% CI=0.97, 1.30; surgical treatment: adjusted odds ratio=0.87, 95% CI=0.61, 1.24). Figure 1 presents the prevalence of mental health treatment (either health care visits for depression and anxiety, antidepressant and anxiolytic prescriptions, or both) and hospitalization after a suicide attempt in 2015 by years since last gender-affirming surgical treatment.

To assess the potentially interrelated and therefore confounding effect of gender-affirming hormone and surgical treatments on each other, a sensitivity analyses was conducted, entering both years since initiation of hormone treatment and years since last surgical treatment simultaneously into the same model predicting odds of mood and anxiety disorder treatment (i.e., psychiatric outpatient health care visits and prescribed psychiatric medication). The results of this analysis were similar to those presented above, with a nonsignificant effect of time since initiation of hormone treatment (adjusted odds ratio=1.03, 95% CI=0.97, 1.08) and a significant effect of years since last gender-affirming surgical treatment (adjusted odds ratio=0.91, 95% CI=0.86, 0.97).

## DISCUSSION

Taking advantage of total population registers containing diagnoses of gender incongruence, gender-related hormone and surgical treatment codes, and mental health treatment utilization, we examined the potential impact of gender-affirming hormone and surgical treatment on later mental health treatment utilization. The results also present the first known population prevalence of mood and anxiety disorder treatment and suicide attempts among transgender individuals compared with the general population. Overall, our results show that transgender individuals, here defined as those with a diagnosis of gender incongruence, are about six times as likely

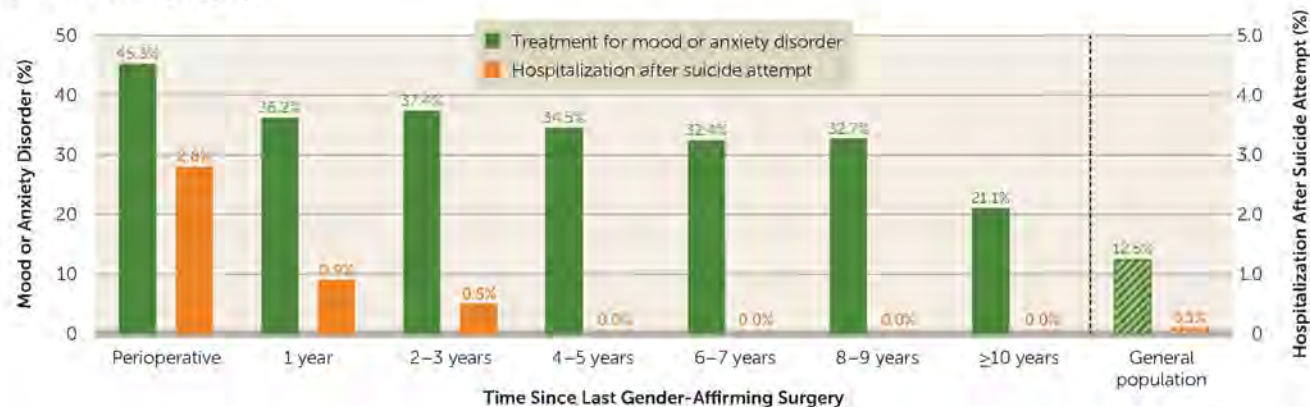
**TABLE 3. Type of, and years since, gender-affirming hormone and surgery treatment in December 31, 2015, among individuals with a gender incongruence diagnosis in Sweden, January 1, 2005, to December 31, 2015**

Measure	N	%
Individuals with gender incongruence diagnosis (N=2,679)		
Time since first gender-affirming hormone treatment		
No hormone treatment	794	29.6
<1 year	359	13.4
1 year	226	8.4
2–3 years	367	13.7
4–5 years	330	12.3
6–7 years	176	6.6
8–9 years	193	7.2
≥10 years	234	8.7
All individuals receiving gender-affirming hormone treatment (N=1,885)		
Type of hormone treatment (more than one type is possible)		
Estrogen or progesterone	1,066	56.6
Androgen	916	48.6
Androgen-suppressing or -blocking medication	808	42.9
All individuals with gender incongruence diagnosis (N=2,679)		
Time since last gender-affirming surgical treatment		
No surgical treatment	1,661	62.0
<1 year	353	13.2
1 year	221	8.2
2–3 years	198	7.4
4–5 years	110	4.1
6–7 years	68	2.5
8–9 years	49	1.8
≥10 years	19	0.7
All individuals receiving gender-affirming surgical treatment (N=1,018)		
Type of surgical procedures (more than one type is possible)		
Breast or dermatological chest surgery	788	77.4
Surgery of the reproductive organs	540	53.0
Dermatological surgery	315	30.9
Laryngeal surgery	70	6.9

as the general population to have had a health care visit for any mood or anxiety disorder, between three and four times as likely to have received prescriptions for antidepressant or anxiolytic medication, and more than six times as likely to have been hospitalized after a suicide attempt. Time since initiating gender-affirming hormone treatment was not associated with these mental health treatment outcomes, whereas time since receiving gender-affirming surgery was significantly associated with a decrease in mental health treatment.

These findings begin to answer the call for population-based documentation of transgender health (1) and extend earlier evidence of associations between gender-affirming treatment and improved mental health mostly derived from studies utilizing cross-sectional designs or short follow-up periods, self-reported exposures and outcomes, and small nonprobability samples (2, 10, 11). In addition to showing that transgender individuals are more likely to utilize mental health treatments than the general population, the results suggest that gender-affirming treatments may reduce this risk. Specifically, the odds of receiving mental health treatment in 2015 were reduced by 8% for every year since

**FIGURE 1.** Prevalence of treatment for mood or anxiety disorders (health care visit or antidepressant or anxiolytic prescription) and hospitalization after suicide attempt in 2015 among individuals with a gender incongruence diagnosis, by number of years since last gender-affirming surgery



receiving gender-affirming surgery over the 10-year follow-up period. Despite this linear decrease, even 10 years after receiving such treatments, the prevalence of mental health treatment utilization continued to exceed that of the general Swedish population (24), suggesting the need to address factors in addition to gender-affirming treatment availability that may strengthen transgender individuals' mental health. Such factors may include reductions in structural (e.g., economic inequality), interpersonal (e.g., victimization), and psychosocial (e.g., identity concealment) stressors to which transgender individuals are disproportionately exposed (4, 24). Ensuring access to transgender-affirming mental health care may also further reduce transgender individuals' persistent psychiatric risk (25). Although the prevalence of hospitalization after suicide attempt among those with a gender incongruence diagnosis was too small for statistical testing, the numbers who were treated after a suicide attempt decreased as a function of years since last gender-affirming surgery. Among those who received their last gender-affirming surgery more than 3 years ago, no suicide attempts were registered.

Despite the notable methodological strengths of utilizing data from a total population, the results should be interpreted in light of several limitations. First, the criterion used here to define the transgender population does not capture the full spectrum of those who identify as transgender. We specifically lacked information regarding gender assigned at birth, legal gender change, and gender identity at the time of data collection, preventing subgroup analyses of the transgender population (26). Recent estimates across five countries suggest that between 0.4% and 1.3% of the population may identify as transgender, including gender-nonconforming individuals who do not seek gender-affirming hormone or surgical treatment (18, 27–29). Although the transgender population in the present study is limited to individuals with a diagnosis of gender incongruence, this population is of particular concern to the medical community because of its high likelihood of seeking gender-affirming hormone and surgical

treatments. Given the free availability of gender-affirming treatments in Sweden, our approach to ascertaining this particular population is likely highly sensitive. Our approach also did not include a comparison group of individuals who had sought but not yet received gender-affirming treatment. While this population might be able to serve as an important comparison group in future studies, without the ability to distinguish between those who had not received treatment because they are waiting for it and those not seeking it in the first place, the current data structure cannot provide this comparison. Longitudinal designs assessing within-person changes in treatment seeking, treatment receipt, and ultimate mental health outcomes would be essential for tracking mental health before and immediately after treatment. Because our approach could only ascertain suicide attempts among living individuals, longitudinal designs that allow for tracking completed suicide among decedents remains an important future direction.

Second, mental health treatment utilization is an imperfect proxy for mental health itself. Transgender people receiving treatment for gender incongruence are by definition exposed to treatment settings, which may disproportionately expose them to mental health treatment opportunities. Although the Swedish context of universal health care coverage removes financial barriers to treatment seeking, other unmeasured factors, such as general tendency toward treatment seeking or perceived discrimination in treatment settings, may influence the associations examined here. Third, because we derived information about outpatient psychiatric health care visits from national health care databases, we had limited information about the type of mental health treatment patients received, and we could not differentiate among individuals receiving psychotropic medication, psychotherapy, or both. Fourth, this study was conducted in a single high-income national context with legal protections for transgender individuals and universal health coverage, including for gender-affirming treatments. While this context makes the present study possible,

it also may constrain the generalizability of findings to low- and middle-income countries and to countries that lack transgender protections or universal health care coverage.

Overall, this study provides timely support for policies that ensure coverage of gender-affirming treatments. Although gender-affirming treatments are recommended as a medical necessity for appropriately selected individuals experiencing gender incongruence and are a covered health benefit in most developed countries, uncertainty exists, such as in the United States, regarding federal protections of transgender employees from transgender-related exclusions in employee benefits (30). In the context of such uncertainty, some U.S. states deny use of state funds to cover costs for gender-affirming treatments, and the Veterans Health Administration specifically prohibits gender-affirming surgery within Veterans Affairs (VA) facilities or use of VA funding for gender-affirming treatments (31, 32). To the extent that gender-affirmative medical interventions are interpreted as sterilization, many hospitals can refuse to provide such care, citing religious directives (33). Debates regarding the provision of gender-affirming health care are global, and in much of the world, such care is unavailable or largely unaffordable (29). Therefore, in many contexts around the world, lack of coverage for gender-affirming treatments drives the use of non-medically supervised hormones and surgeries, thereby exacerbating physical health risks (34) and the other epidemics disproportionately borne by the global transgender population, including suicide and HIV infection. The longitudinal association found in the present study between gender-affirming surgery and reduced mental health treatment utilization, combined with the physical and mental health risks of surgery denial, supports policies that provide gender-affirming surgeries to transgender individuals who seek such treatments.

## ADDENDUM

After this article was published online on October 4, 2019, some letters containing questions on the statistical methodology employed led the *Journal* to seek statistical consultations. The results of these consultations were presented to us and we concurred with many of the points raised. The letters (35-41) and our response to them (42) appear in the Letters to the Editor section of the August 2020 issue of the *Journal*.

## AUTHOR AND ARTICLE INFORMATION

Department of Social and Behavioral Sciences, Yale School of Public Health, New Haven, Conn. (Bränström, Pachankis); and the Department of Clinical Neuroscience, Karolinska Institutet, Stockholm (Bränström).

Send correspondence to Dr. Bränström (richard.branstrom@ki.se).

Supported by the Swedish Research Council (no. 2016-01707) and the Swedish Research Council for Health, Working Life, and Welfare (no. 2018-01628).

The authors report no financial relationships with commercial interests.

Received January 25, 2019; revisions received May 7 and June 14, 2019; accepted July 16, 2019; published online Oct. 4, 2019.

## REFERENCES

1. Reisner SL, Poteat T, Keatley J, et al: Global health burden and needs of transgender populations: a review. *Lancet* 2016; 388: 412-436
2. Dhejne C, Van Vlerken R, Heylens G, et al: Mental health and gender dysphoria: a review of the literature. *Int Rev Psychiatry* 2016; 28: 44-57
3. Connolly MD, Zervos MJ, Barone CJ 2nd, et al: The mental health of transgender youth: advances in understanding. *J Adolesc Health* 2016; 59:489-495
4. White Hughto JM, Reisner SL, Pachankis JE: Transgender stigma and health: a critical review of stigma determinants, mechanisms, and interventions. *Soc Sci Med* 2015; 147:222-231
5. Hatzienbuehler ML, Pachankis JE: Stigma and minority stress as social determinants of health among lesbian, gay, bisexual, and transgender youth: research evidence and clinical implications. *Pediatr Clin North Am* 2016; 63:985-997
6. Sevelius JM: Gender affirmation: a framework for conceptualizing risk behavior among transgender women of color. *Sex Roles* 2013; 68:675-689
7. World Health Organization: International Classification of Diseases, 11th Revision (ICD-11). Geneva, World Health Organization, 2018
8. Dhejne C, Öberg K, Arver S, et al: An analysis of all applications for sex reassignment surgery in Sweden, 1960-2010: prevalence, incidence, and regrets. *Arch Sex Behav* 2014; 43:1535-1545
9. Coleman E, Bockting W, Botzer M, et al: Standards of Care for the Health of Transsexual, Transgender, and Gender-Nonconforming People, 7th Version. *Int J Transgenderism* 2012; 13:165-232
10. Murad MH, Elamin MB, Garcia MZ, et al: Hormonal therapy and sex reassignment: a systematic review and meta-analysis of quality of life and psychosocial outcomes. *Clin Endocrinol (Oxf)* 2010; 72: 214-231
11. White Hughto JM, Reisner SL: A systematic review of the effects of hormone therapy on psychological functioning and quality of life in transgender individuals. *Transgend Health* 2016; 1:21-31
12. Fisher AD, Castellini G, Ristori J, et al: Cross-sex hormone treatment and psychobiological changes in transsexual persons: two-year follow-up data. *J Clin Endocrinol Metab* 2016; 101: 4260-4269
13. Dhejne C, Lichtenstein P, Boman M, et al: Long-term follow-up of transsexual persons undergoing sex reassignment surgery: cohort study in Sweden. *PLoS One* 2011; 6:e16885
14. Swedish National Board of Health and Welfare: Good Care of Adults With Gender Dysphoria. Stockholm, Swedish National Board of Health and Welfare, 2015
15. Torjesen I: Trans health needs more and better services: increasing capacity, expertise, and integration. *BMJ* 2018; 362:k3371
16. Wood H, Sasaki S, Bradley SJ, et al: Patterns of referral to a gender identity service for children and adolescents (1976-2011): age, sex ratio, and sexual orientation. *J Sex Marital Ther* 2013; 39:1-6
17. Chen M, Fuqua J, Eugster EA: Characteristics of referrals for gender dysphoria over a 13-year period. *J Adolesc Health* 2016; 58:369-371
18. Zucker KJ: Epidemiology of gender dysphoria and transgender identity. *Sex Health* 2017; 14:404-411
19. Ludvigsson JF, Andersson E, Ekblom A, et al: External review and validation of the Swedish national inpatient register. *BMC Public Health* 2011; 11:450
20. Drescher J: Queer diagnoses revisited: the past and future of homosexuality and gender diagnoses in DSM and ICD. *Int Rev Psychiatry* 2015; 27:386-395
21. Lundgren TK, Isung J, Rinder J, et al: Moving transgender care forward within public health organizations: inclusion of facial

- feminizing surgery in the Swedish National Treatment Recommendations. *Arch Sex Behav* 2016; 45:1879–1880
22. The Swedish National Board of Health and Welfare: Good Care of Children and Adolescents With Gender Dysphoria. Stockholm, Swedish National Board of Health and Welfare, 2015
23. World Health Organization: International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10). Geneva, World Health Organization, 1993
24. Sundquist J, Ohlsson H, Sundquist K, et al: Common adult psychiatric disorders in Swedish primary care where most mental health patients are treated. *BMC Psychiatry* 2017; 17:235
25. Bockting WO, Knudson G, Goldberg JM: Counseling and mental health care for transgender adults and loved ones. *Int J Transgenderism* 2006; 9:35–82
26. Nieder TO, Herff M, Cerwenka S, et al: Age of onset and sexual orientation in transsexual males and females. *J Sex Med* 2011; 8:783–791
27. Flores AR, Herman JL, Gates GJ, et al: How many adults identify as transgender in the United States? Los Angeles, Williams Institute, June 2016
28. Collin L, Reisner SL, Tangpricha V, et al: Prevalence of transgender depends on the “case” definition: a systematic review. *J Sex Med* 2016; 13:613–626
29. Winter S, Diamond M, Green J, et al: Transgender people: health at the margins of society. *Lancet* 2016; 388:390–400
30. Baker KE: The future of transgender coverage. *N Engl J Med* 2017; 376:1801–1804
31. Kuzon WM Jr, Sluiter E, Gast KM: Exclusion of medically necessary gender-affirming surgery for America’s armed services veterans. *AMA J Ethics* 2018; 20:403–413
32. Veterans Health Administration: Providing Health Care for Transgender and Intersex Veterans; Directive 1341. Washington, DC, Veterans Health Administration, 2018
33. United States Conference of Catholic Bishops: Ethical and Religious Directives for Catholic Health Care Services, 5th ed. Washington, DC, United States Conference of Catholic Bishops, November 17, 2009
34. Sanchez NE, Sanchez JP, Danoff A: Health care utilization, barriers to care, and hormone usage among male-to-female transgender persons in New York City. *Am J Public Health* 2009; 99:713–719
35. Anckarsäter H, Gillberg C: Methodological shortcomings undercut statement in support of gender-affirming surgery. *Am J Psychiatry* 2020; 177:764–765
36. Van Mol A, Laidlaw M, Grossman M, et al: Gender affirmation surgery conclusion lacks evidence. *Am J Psychiatry* 2020; 177:765–766
37. Curtis D: Study of transgender patients: conclusions are not supported by findings. *Am J Psychiatry* 2020; 177:766
38. Malone W, Roman S: Calling into question whether gender affirming surgery relieves psychological distress. *Am J Psychiatry* 2020; 177:766–767
39. Landén M: The effect of gender-affirming treatment on psychiatric morbidity is still undecided. *Am J Psychiatry* 2020; 177:767–768
40. Wold A: Gender corrective surgery promoting mental health in persons with gender dysphoria not supported by data presented in paper. *Am J Psychiatry* 2020; 177:768
41. Ring A, Malone M: Confounding effects on mental health observations after sex reassignment surgery. *Am J Psychiatry* 2020; 177:768–769
42. Bränström R, Pachankis JE: Toward rigorous methodologies for strengthening causal inference in the association between gender-affirming care and transgender individuals’ mental health. *Am J Psychiatry* 2020; 177:769–772

### Correction to Bränström and Pachankis

After the article “Reduction in Mental Health Treatment Utilization Among Transgender Individuals After Gender-Affirming Surgeries: A Total Population Study” by Richard Bränström, Ph.D., and John E. Pachankis, Ph.D. (doi: 10.1176/appi.ajp.2019.19010080), was published online on October 4, 2019, some letters containing questions on the statistical methodology employed in the study led the *Journal* to seek statistical consultations. The results of these consultations were presented to the study authors, who concurred with many of the points raised. Upon request, the authors reanalyzed the data to compare outcomes between individuals diagnosed with gender incongruence who had received gender-affirming surgical treatments and those diagnosed with gender incongruence who had not. While this comparison was performed retrospectively and was not part of the original research question given that several other factors may differ between the groups, the results demonstrated no advantage of surgery in relation to subsequent mood or anxiety disorder-related health care visits or prescriptions or hospitalizations following suicide attempts in that comparison. Given that the study used neither a prospective cohort design nor a randomized controlled trial design, the conclusion that “the longitudinal association between gender-affirming surgery and lower use of mental health treatment lends support to the decision to provide gender-affirming surgeries to transgender individuals who seek them” is too strong. Finally, although the percentage of individuals with a gender incongruence diagnosis who had received gender-affirming surgical treatments during the follow-up period is correctly reported in Table 3 (37.9%), the text incorrectly refers to this percentage as 48%. The article was reposted on August 1, 2020, correcting this percentage and including an addendum referencing the postpublication discussion captured in the Letters to the Editor section of the August 2020 issue of the *Journal* (1).

1. Kalin NH: Reassessing mental health treatment utilization reduction in transgender individuals after gender-affirming surgeries: a comment by the editor on the process (letter). *Am J Psychiatry* 2020; 177:765

## Letters to the Editor

### Reassessing Mental Health Treatment Utilization Reduction in Transgender Individuals After Gender-Affirming Surgeries: A Comment by the Editor on the Process

On October 4, 2019, we published an article by Bränström and Pachankis in which it was reported that observed reductions in mental health treatment utilization lent support to the decision to provide gender-affirming surgeries to those who seek them (1). After this article's publication, we received several letters calling into question the statistical analyses employed and the conclusions drawn from said analyses. These letters follow this comment (2–8).

We enlisted the services of a statistical reviewer to look again at the article as well as the letters we received. We then sent the letters we received and the results of this statistical review, which called for a matched-pairs analysis, to the original authors. The study authors complied with the request to perform an additional analysis, as presented in their letter response (9).

We sent the original letters, statistical review, and author response to a second statistical reviewer. The response from this consultation convinced us that, given that the study used neither a prospective cohort design nor a randomized controlled trial design, the conclusion that “the longitudinal association between gender-affirming surgery and reduced likelihood of mental health treatment lends support to the decision to provide gender-affirming surgeries to transgender individuals who seek them” was too strong. In the August 2020 issue of the *Journal*, we are publishing a correction to this effect and including an addendum to the article pointing to this postpublication discussion and process, both of which were composed with contributions and approval from the original article authors.

We thank the letter writers, statistical reviewers, and the original study authors—as well as the editorialist we invited to place this study's findings in context (10)—for helping us to make clear to our readers and for the literature what the article shows and what still remains to be investigated in future research.

#### REFERENCES

1. Bränström R, Pachankis JE: Reduction in mental health treatment utilization among transgender individuals after gender-affirming surgeries: a total population study. *Am J Psychiatry* 2020; 177: 727–734
2. Anckarsäter H, Gillberg C: Methodological shortcomings undercut statement in support of gender-affirming surgery (letter). *Am J Psychiatry* 2020; 177:764–765
3. Van Mol A, Laidlaw MK, Grossman M, et al: Gender-affirmation surgery conclusion lacks evidence (letter). *Am J Psychiatry* 2020; 177:765–766
4. Curtis D: Study of transgender patients: conclusions are not supported by findings (letter). *Am J Psychiatry* 2020; 177:766
5. Malone WJ, Roman S: Calling into question whether gender-affirming surgery relieves psychological distress (letter). *Am J Psychiatry* 2020; 177:766–767
6. Landén M: The effect of gender-affirming treatment on psychiatric morbidity is still undecided (letter). *Am J Psychiatry* 2020; 177: 767–768
7. Wold A: Gender-corrective surgery promoting mental health in persons with gender dysphoria not supported by data presented in article (letter). *Am J Psychiatry* 2020; 177:768
8. Ring A, Malone WJ: Confounding effects on mental health observations after sex reassignment surgery (letter). *Am J Psychiatry* 2020; 177:768–769
9. Bränström R, Pachankis JE: Toward rigorous methodologies for strengthening causal inference in the association between gender-affirming care and transgender individuals' mental health: response to letters (letter). *Am J Psychiatry* 2020; 177:769–772
10. Mueller SC: Mental health treatment utilization in transgender persons: what we know and what we don't know (editorial). *Am J Psychiatry* 2020; 177:657–659

Ned H. Kalin, M.D.

Editor-in-Chief

*The American Journal of Psychiatry*

*Am J Psychiatry* 2020; 177:764; doi: 10.1176/appi.ajp.2020.20060803

### Methodological Shortcomings Undercut Statement in Support of Gender-Affirming Surgery

TO THE EDITOR: The article by Bränström and Pachankis (1) has the stated aim “to ascertain the prevalence of mood and anxiety disorder health care visits and antidepressant and anxiolytic prescriptions in 2015 as a function of gender incongruence diagnosis and gender-affirming hormone and surgical treatment in the entire Swedish population.” The authors conclude that “the longitudinal association between gender-affirming surgery and reduced likelihood of mental health treatment lends support to the decision to provide gender-affirming surgeries to transgender individuals who seek them.” In support of this claim, the authors report that the time since “last gender-affirming surgery” (in 2005–2014) was associated with reduced “mental health treatment” (a combined variable of outpatient visits with a diagnosis of a mood or anxiety disorder and/or prescriptions for antidepressants or anxiolytics) during 2015 (adjusted odds ratio=0.92, 95% CI=0.87–0.98). The authors have also

shown that the group of people diagnosed with gender incongruence have a dramatically worse overall mental health outcome than the general population, which is, in fact, the answer to their stated aim and research question, but this finding is not even referred to in the title or in the Conclusions section of the article.

In view of the claim that surgery was shown to be an efficient treatment for gender incongruence, the following issues have to be raised:

1. Variables, hypotheses, and analytical strategies were not described pre hoc. Adequate power analyses and corrections for multiple comparisons were not provided.
2. The article is vague or noninformative with respect to key aspects. Biological sex ratios are not provided. Surgeries for complications or even unrelated surgeries (e.g., in the skin or the larynx) may have been included. Lithium and atypical antipsychotic medications were not included as treatments for mood disorders, while a histamine blocker such as hydroxyzine, which is mainly used for non-mental health problems, was. Outpatient visits for mood and anxiety disorders were included as "mental health treatment" but not care for sleeping disorders, substance-related disorders, major mental disorders, or any inpatient psychiatric treatment.
3. The nonnormal distribution of data, known secular changes, age effects, or people who left Sweden and moved abroad, died from suicide or other causes, or had surgery to desist were not considered in the interpretation of the analyses.

As the article stands, we actually have no way of knowing whether the four reported analyses of purported treatment effects (time elapsed since start of hormones OR since last surgery BY outpatient mental health treatment OR suicide attempt-related hospitalization), one of which was statistically significant by a small margin, were the first analyses made or the final setup chosen for publication after a "fishing expedition" in the database.

These methodological shortcomings preclude any statement on the suitability of early surgery in persons seeking treatment for gender noncongruence based on the results presented in this article.

## REFERENCE

1. Bränström R, Pachankis JE: Reduction in mental health treatment utilization among transgender individuals after gender-affirming surgeries: a total population study. *Am J Psychiatry* 2020; 177: 727–734

Henrik Anckarsäter, M.D., Ph.D.  
Christopher Gillberg, M.D., Ph.D.

Centre for Ethics, Law and Mental Health (Anckarsäter), and Gillberg Neuropsychiatry Centre (Gillberg), University of Gothenburg, Gothenburg, Sweden.  
Send correspondence to Dr. Anckarsäter (henrik.anckarsater@neuro.gu.se).

The authors report no financial relationships with commercial interests.

Accepted May 18, 2020.

*Am J Psychiatry* 2020; 177:764–765; doi: 10.1176/appi.ajp.2020.19111117

*Am J Psychiatry* 177:8, August 2020

## Gender-Affirmation Surgery Conclusion Lacks Evidence

TO THE EDITOR: We have concerns regarding severe shortcomings in the study by Bränström and Pachankis (1) that call into question the authors' conclusion that it "provides timely support for policies that ensure coverage of gender-affirming treatments."

This study covered outcomes only for calendar year 2015 for all individuals living in Sweden on December 31, 2014. The retrospective metric of "time since last gender-affirming surgery" in Figure 1 in the article is easily misinterpreted as a prospective 10-year follow-up that did not occur and leaves open the question of number and type of prior surgeries.

The 2,679 individuals diagnosed with gender incongruence in Sweden is a full order of magnitude below prevalence expectations from DSM-5. Table 3 in the article indicates that 38% of these individuals had any kind of gender-affirming surgery, but only 53% of those had surgery of reproductive organs. Given that such treatment in Sweden is free, ample loss to follow-up is implied.

Measured outcomes were limited to "mood and anxiety disorder health care visits, antidepressant and anxiolytic prescriptions, and hospitalization after a suicide attempt." This selection excludes completed suicides, suicide attempts without subsequent hospitalization, health care visits and hospitalizations for other medical or psychological issues still related to gender-affirming surgeries, individuals refusing treatment, and individuals choosing self-medication with alcohol or illicit substances. Again, significant loss to follow-up must be considered before declaring success.

Dhejne's cohort study of 324 persons in Sweden undergoing sex-reassignment surgery used 30 years of data, population controls, and matching by birth year, birth sex, and reassigned sex (2). Through the Hospital Discharge Register, the authors evaluated discharge diagnoses, external causes of morbidity and mortality, and surgical procedure codes. Compared with the general population, patients who had sex reassignment surgery had 19 times the rate of completed suicide, almost three times the rate of all-cause mortality, nearly three times the rate of inpatient psychiatric care, and close to five times the rate of suicide attempts.

These important findings could have been updated to the current period, given the sharp rise in adolescent case presentations, use of puberty blockers, and changes in cross-sex hormones from agents like ethinyl estradiol to 17 $\beta$ -estradiol.

For those whose last surgery was 10 or more years earlier, how many completed suicide, died of other causes, or left Sweden prior to study initiation? A drop in hospitalizations for suicide attempts alone provides a very incomplete picture. When the data for such findings are accessible in the Swedish national registers, this omission is glaring.

The lack of control subjects, the limited 1-year time frame, and the avoidance of examining completed suicides and psychiatric hospitalizations are substantial study shortfalls.

*ajp.psychiatryonline.org* 765

The study supports only weak conclusions about psychiatric medication usage and nothing decisive about suicidality. In overlooking so much available data, this study lacks the evidence to support its progender-affirmation surgery conclusion.

## REFERENCES

1. Bränström R, Pachankis JE: Reduction in mental health treatment utilization among transgender individuals after gender-affirming surgeries: a total population study. *Am J Psychiatry* 2020; 177: 727–734
2. Dhejne C, Lichtenstein P, Boman M, et al: Long-term follow-up of transsexual persons undergoing sex reassignment surgery: cohort study in Sweden. *PLoS One* 2011; 6:e16885

Andre Van Mol, M.D.  
Michael K. Laidlaw, M.D.  
Miriam Grossman, M.D.  
Paul R. McHugh, M.D.

Family Practice, Dignity Health Medical Group North State, Redding, Calif. (Van Mol); Michael K. Laidlaw, M.D., Inc., Rocklin, Calif. (Laidlaw); Miriam Grossman, M.D., Psychiatry, New York (Grossman); Department of Psychiatry and Behavioral Sciences, Johns Hopkins University, Baltimore (McHugh).

Send correspondence to Dr. Laidlaw (docdrlaidlaw@gmail.com).

Dr. McHugh is listed as a coauthor of the Mini-Mental State Examination. The other authors report no financial relationships with commercial interests.

Accepted May 18, 2020.

*Am J Psychiatry* 2020; 177:765–766; doi: 10.1176/appi.ajp.2020.19111130

## Study of Transgender Patients: Conclusions Are Not Supported by Findings

TO THE EDITOR: The study of transgender individuals by Bränström and Pachankis claims to demonstrate a reduction in mental health treatment utilization after gender-affirming surgery but, in fact, demonstrates no such thing (1).

The only result they present that they claim is statistically significant is that there is an association between years since last gender-affirming surgery and recent mental health treatment (adjusted odds ratio=0.92, 95% CI=0.87–0.98). This result makes no sense as it stands because analysis of a quantitative measure against an outcome does not produce an odds ratio. Presumably, the authors must mean that each year since surgery is associated with an odds ratio of 0.92. There are also discrepancies between the data discussed in the text and in the tables. For example, the authors quote the percentage of patients with gender incongruence who received no treatment as 29% in the text but 29.6% in Table 3 and, more importantly, the percentage of patients who received surgery as 48% in the text but only 38.0% in the table. However, the key statistical criticism is that they have failed to carry out standard corrections for multiple testing. As they tested two interventions, hormone treatment and surgery, against two outcomes, mental health treatment and suicide attempts, they performed four tests. Because the upper confidence interval that they quote is very close to 1, it is obvious that if appropriate correction for multiple testing had been applied, then none of the results would have been deemed significant.

When one views the data on which these analyses are based, as presented in Figure 1 in the article, some very clear features emerge. First, there is obviously no general correlation between the outcomes and time since surgery. Rather, a spike in suicide attempts is seen in the year after surgery (in 2.8% of the patients), which falls off over the next 1–2 years, and to a lesser extent, there is also a spike in the proportion of patients receiving mental health treatment in the first year, going up to 45.3%. There is also a low rate of mental health treatment among patients who received surgery 10 or more years earlier. This may reflect the fact that in the past, patients with mental health problems would have been less likely to be offered surgery.

The study confirms the strong association between psychiatric morbidity and the experience of incongruity between gender identity and biological sex. However, the study does not demonstrate that either hormonal treatment or surgery has any effect on this morbidity. It seems that the main message of this article is that the incidence of mental health problems and suicide attempts is especially high in the year after the completion of gender-affirming surgery and that increased support in this period might be indicated.

## REFERENCE

1. Bränström R, Pachankis JE: Reduction in mental health treatment utilization among transgender individuals after gender-affirming surgeries: a total population study. *Am J Psychiatry* 2020; 177:727–734

David Curtis, M.D., Ph.D.

UCL Genetics Institute, University College London, London; and Centre for Psychiatry, Queen Mary University of London, London.

Send correspondence to Prof. Curtis (d.curtis@ucl.ac.uk).

The author reports no financial relationships with commercial interests.

Accepted May 18, 2020.

*Am J Psychiatry* 2020; 177:766; doi: 10.1176/appi.ajp.2020.19111131

## Calling Into Question Whether Gender-Affirming Surgery Relieves Psychological Distress

TO THE EDITOR: The study by Bränström and Pachankis (1) shows a reduction in mental health treatments and hospitalization after suicide attempts with increased time after masculinizing or feminizing surgeries.

The data presented in Figure 1 in the article support findings from previous studies showing that transgender individuals have baseline mental health distress that is higher than that of the general population, but it is not possible to conclude from these data whether gender-affirming surgery relieves that distress.

According to the study, mental health utilization rates were highest in the perioperative period. However, the data also could be interpreted as showing that masculinizing or feminizing surgeries were the actual cause of increased mental health utilization. Surgery is a known risk factor for the development of depression (2) and may have caused a

deterioration in mental health in a population of individuals who already had more psychological distress, which abated with time since surgery. It is just as possible that mental health improved as individuals had fewer surgeries.

After the initial 11% drop in mental health visits in the first year after surgery, there was very little change in mental health visits (5.6% over 9 years), and there was a further 11% fall in the  $\geq 10$ -year group. It is not clear what caused the reduction in the two markers for mental health distress past the 10-year mark. Loss to follow-up, death from suicide of the most psychologically distressed individuals, or death from cardiovascular disease, all known to be increased in the transgender population, could have falsely skewed the  $\geq 10$ -year data. Comparisons with a control group would be best to answer these questions.

In addition, there are only 19 people in the  $\geq 10$ -year group who underwent gender-affirming surgery. A total of 21.1% of them received mental health treatment, which is only four people. This means that a single mental health utilization event in either direction would change the calculated rate of utilization by 5%. However, the assertion that gender-affirming surgeries reduce mental health visits by 8% is highly dependent upon this sudden drop in rates in the  $\geq 10$ -year group of only 19 people.

Finally, no information is given about the composition of the year 1 and  $\geq 10$ -year groups, but given the changing epidemiology of gender dysphoria in Sweden (3), the year 1 group likely included a higher percentage of younger natal females than the  $\geq 10$ -year group, which likely had more older natal males, making comparisons between the year 1 and  $\geq 10$ -year groups problematic.

Because of the limitations in the study design, it is not possible to determine the cause of the differences in mental health service utilization or whether true reductions in psychological distress actually occurred. Therefore, the authors' conclusion that the results of their study should be interpreted to support policies that provide gender-affirming surgeries cannot be supported.

## REFERENCES

1. Bränström R, Pachankis JE: Reduction in mental health treatment utilization among transgender individuals after gender-affirming surgeries: a total population study. *Am J Psychiatry* 2020; 177:727–734
2. Wilson BR, Tringale KR, Hirshman BR, et al: Depression after spinal surgery: a comparative analysis of the California outcomes database. *Mayo Clin Proc* 2017; 92:88–97
3. Landén M: [Dramatic increase in adolescent gender dysphoria requires careful consideration.] *Lakartidningen* 2019; 116 (Swedish)

William J. Malone, M.D.  
Sven Roman, M.D.

Idaho College of Osteopathic Medicine, Boise (Malone); Dr. Roman is in private practice in child and adolescent psychiatry in Stockholm.

Send correspondence to Dr. Malone (malone.will@gmail.com).

The authors report no financial relationships with commercial interests.

Accepted May 18, 2020.

*Am J Psychiatry* 2020; 177:766–767; doi: 10.1176/appi.ajp.2020.1911149

*Am J Psychiatry* 177:8, August 2020

## The Effect of Gender-Affirming Treatment on Psychiatric Morbidity Is Still Undecided

TO THE EDITOR: In this issue of the *Journal*, Bränström and Pachankis study mental health treatment and suicide attempts in persons diagnosed with gender dysphoria in Sweden (1). Their claim that the study shows that gender-affirming treatment reduces the risk of mental health treatment and suicide attempts is misleading because the study design is flawed.

The authors first found what was already known (2): the rate of psychiatric morbidity is much higher in persons with gender dysphoria compared with the general population. The authors then explored if the risk for mental health treatment changes as a function of years since starting hormonal treatment. They find no effect (odds ratio=1.0), but they do find a trend toward increased risk of suicide attempts as a function of years since starting hormonal treatment. In their key analysis, allegedly showing that gender-affirming surgery decreases risk for psychiatric treatment and suicide attempts, they relate these negative outcomes to the number of years since surgery. Contrary to what the authors repeatedly claim, they do not employ a longitudinal design but conduct a retrospective analysis unfit for their research question.

First, the authors include only persons who were alive in 2014. That means that those who died by suicide before 2014—and hence were at highest risk for suicide attempt—are excluded and confound the results. Second, any analysis starting with a negative event is bound to find a decreased risk for related negative outcomes with increasing time after the event. To exemplify this point, the rate of antidepressant treatment would decrease with time after a suicide attempt. This does not mean that suicide attempts cause a decrease in risk of antidepressant treatment; it is merely a case of regression toward the mean. Third, persons undergoing gender transition have, by definition, contact with mental health services in Sweden. After the transition, persons are followed up by endocrinologists and sometimes general practitioners; only those with persistent mental health issues are followed in psychiatric care. The authors' finding of lower rates of mental health treatment with increasing time after surgery is therefore not only a case of regression toward the mean, but it also follows from the standards of care and is not a proxy for improved mental health.

Because the authors do not present data prior to gender-affirming surgery, the study is uninformative with regard to the effects on psychiatric morbidity. Moreover, the authors miss the one conclusion that can be drawn: that the peri-operative transition period seems to be associated with high risk for suicide attempt. Future research should use properly designed observational studies to answer the important question as to whether gender-affirming treatment affects psychiatric outcomes.

## REFERENCES

1. Bränström R, Pachankis JE: Reduction in mental health treatment utilization among transgender individuals after gender-affirming

ajp.psychiatryonline.org 767

- surgeries: a total population study. *Am J Psychiatry* 2020; 177: 727–734
2. Dhejne C, Lichtenstein P, Boman M, et al: Long-term follow-up of transsexual persons undergoing sex reassignment surgery: cohort study in Sweden. *PLoS One* 2011; 6:e16885

Mikael Landén, M.D., Ph.D.

*Institute of Neuroscience and Physiology, Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden; and Department of Medical Epidemiology and Biostatistics, Karolinska Institutet, Stockholm*

*Send correspondence to Dr. Landén (mikael.landen@gu.se)*

*Dr. Landén has received lecture honoraria from Lundbeck.*

*Accepted May 18, 2020.*

*Am J Psychiatry* 2020; 177:767–768; doi: 10.1176/appi.ajp.2020.19111165

## Gender-Corrective Surgery Promoting Mental Health in Persons With Gender Dysphoria Not Supported by Data Presented in Article

TO THE EDITOR: The article by Bränström and Pachankis (1) examines the psychiatric health of persons who have obtained a diagnosis of gender dysphoria between 2005 and 2015 compared with the general population. The variables examined were psychiatric diagnosis, prescription of psychiatric drugs (anxiolytics and antidepressants), and hospitalization for suicide attempt in 2015.

The results confirm what is already known, that is, that as a group, persons with gender dysphoria suffer from poorer psychiatric health than the general population.

However, the title of the article implies that gender-corrective surgery promotes mental health in this group, and the authors conclude in the Abstract section that the study “lends support to the decision to provide gender-affirming surgeries to transgender individuals who seek them.” In my opinion, this conclusion is not supported by the data presented in the article.

The most straightforward method to test whether surgery contributes to better psychological health would be to compare the health of those who underwent surgery with those who did not.

Of the persons diagnosed with gender dysphoria presented in the article, 1,018 had undergone surgery, while 1,661 had not. There were 22 individuals who were hospitalized in 2015 for a suicide attempt. The authors do not state how many of these individuals had received surgery, but this may be calculated by combining the data from Table 3 and Figure 1 in the article. Figure 1 shows the proportion of persons with gender dysphoria who were hospitalized for suicide attempt in 2015, grouped according to the time that had elapsed since the last gender-corrective surgery. Table 3 shows the number of individuals with gender dysphoria, grouped according to the time elapsed since last surgical operation (“Time since last gender-affirming surgical treatment”).

By combining these data, we can calculate that 10 of the suicide attempts (2.8% of 353) occurred during the same year that the last surgical correction was made (“perioperative” group in Figure 1). Two cases occurred 1 year after the last

surgical correction (0.9% of 221) and one case 2–3 years after the last surgical treatment (0.5% of 198), while none occurred more than 3 years after the last surgery. Thus, 13 individuals (10 plus two plus one) of the 22 persons who were hospitalized for a suicide attempt in 2015 had undergone gender-corrective surgery. Consequently, nine of them (22 minus 13) had not undergone any gender-affirmation surgery.

This corresponds to an odds ratio of 2.37 (95% CI = 1.01–5.56,  $p=0.047$ ). Hence, among the individuals examined in the study, the risk of being hospitalized for a suicide attempt was 2.4 times higher if they had undergone gender-corrective surgery than if they had not. Whether this is a causal relation (i.e., that surgery actually worsens the poor mental health in individuals with gender dysphoria) cannot be determined. Nevertheless, the data presented in the article do not support the conclusion that surgery is beneficial to mental health in individuals with gender dysphoria.

## REFERENCE

1. Bränström R, Pachankis JE: Reduction in mental health treatment utilization among transgender individuals after gender-affirming surgeries: a total population study. *Am J Psychiatry* 2020; 177:727–734

Agnes Wold, M.D., Ph.D.

*Department of Infectious Diseases, Institute of Biomedicine, Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden.*

*Send correspondence to Dr. Wold (agnes.wold@microbio.gu.se).*

*The author reports no financial relationships with commercial interests.*

*Accepted May 18, 2020.*

*Am J Psychiatry* 2020; 177:768; doi: 10.1176/appi.ajp.2020.19111170

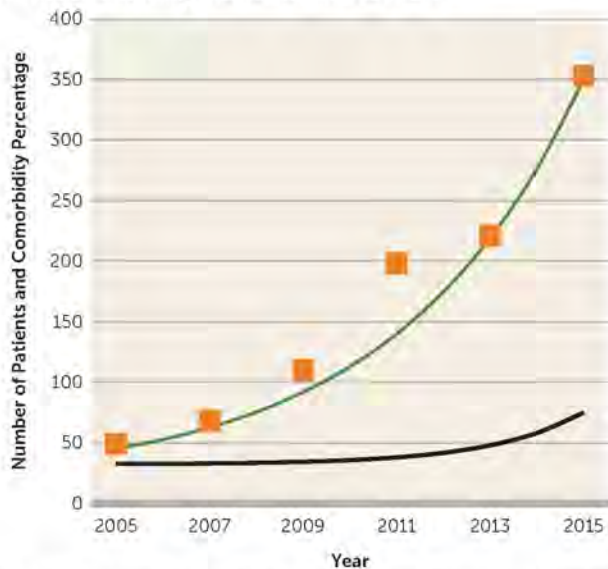
## Confounding Effects on Mental Health Observations After Sex Reassignment Surgery

TO THE EDITOR: Bränström and Pachankis (1) report that Swedes with gender dysphoria who had undergone sex reassignment surgery in the decade to 2015 had a declining need for mental health treatment (as shown in Figure 1 in the article), leading them to consider that sex reassignment surgery improves mental health. However, the same data may be modeled in a way that leads to the opposite conclusion.

Except for a reduction after the perioperative year, Bränström and Pachankis found no further significant decrease in mental health treatment between the first and ninth years after surgery. They allowed for the increase in sex reassignment surgery from 2005 on but overlooked the increase in co-occurring mental health issues, which rose after 2005 but especially from about 2009 (2). A simple qualitative model illustrates how a dramatic change over time in mental health issues will affect the number of individuals accessing mental health treatment in 2015. In our Figure 1, the upper line depicts the rise in the number of sex reassignment surgeries, and the lower dark line depicts the rise in co-occurrence of mental health issues, assuming a final rise of 200% and a final co-occurrence of 75% (3).

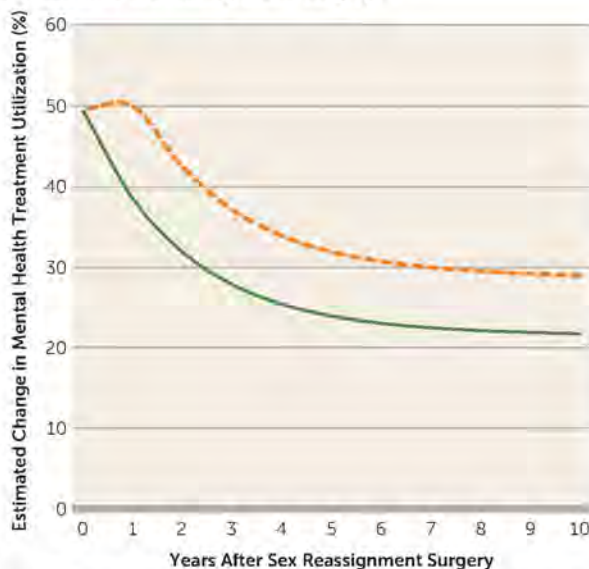
Because patients undergoing this surgery in the years closest to 2015 had higher rates of co-occurring mental health

**FIGURE 1. Qualitative model of the number of sex reassignment surgeries and co-occurrence of mental health issues among individuals accessing mental health treatment<sup>a</sup>**



<sup>a</sup> The orange boxes indicate the number of patients, the green line indicates the number of sex reassignment surgeries, and the dark line indicates the percentage of co-occurrence of mental health issues.

**FIGURE 2. Estimation of mental health utilization by individuals in the years after sex reassignment surgery<sup>a</sup>**



<sup>a</sup> The dotted line portrays projected mental health treatment utilization assuming aggravation of a mental health condition after sex reassignment surgery. The solid line portrays projected mental health treatment utilization assuming no aggravating effects after sex reassignment surgery.

issues than those whose surgery happened longer ago, we would expect the decline in mental health treatment to be pronounced (see the solid line in Figure 2), and with a beneficial effect of the surgery over time, the fall should be even more significant. Yet surprisingly, Bränström and Pachankis found only a very small decline over time.

However, if in fact this surgery aggravates a mental health condition by, say, 25%, then a more moderate fall in mental health utilization results (see the dashed line in Figure 2). The qualitative approximation of this curve with the reduction described by Bränström and Pachankis (in their Figure 1) is striking. Therefore, accounting for the increase in mental health issues from 2005, together with an assumption of increased mental health treatment due to this surgery, fits the data in the article and overturns the authors' conclusions, suggesting that sex reassignment surgery is in fact associated with increased mental health treatment.

## REFERENCES

1. Bränström R, Pachankis JE: Reduction in mental health treatment utilization among transgender individuals after gender-affirming surgeries: a total population study. *Am J Psychiatry* 2020; 177:727–734.
2. Lukianoff G, Haidt J: *The Coddling of the American Mind: How Good Intentions and Bad Ideas Are Setting Up a Generation for Failure*. New York, Penguin, 2018.
3. Kaltiala-Heino R, Sumia M, Työläjärvi M, et al: Two years of gender identity service for minors: overrepresentation of natal girls with severe problems in adolescent development. *Child Adolesc Psychiatry Ment Health* 2015; 9:9.

Avi Ring, Ph.D.  
William J. Malone, M.D.

Pharmacy Department, University of Oslo, Oslo (Ring); and Idaho College of Osteopathic Medicine, Boise (Malone).

Send correspondence to Dr. Ring (avi.ring@gmail.com).

The authors report no financial relationships with commercial interests.

Accepted May 18, 2020.

*Am J Psychiatry* 2020; 177:768–769; doi: 10.1176/appi.ajp.2020.19111169

## Toward Rigorous Methodologies for Strengthening Causal Inference in the Association Between Gender-Affirming Care and Transgender Individuals' Mental Health: Response to Letters

TO THE EDITOR: Increasing attention has been paid to identifying the best way to support transgender individuals seeking gender-affirming care. This attention springs from the increasing number of individuals seeking such care in many countries worldwide, coupled with a lack of sufficient knowledge to provide evidence-based treatment recommendations. This attention is also reflected in the letters to the editor (1–7) submitted in response to our article in this issue in which we describe mental health treatment utilization among transgender individuals seeking gender-affirming care in Sweden compared with the general population, and as a function of time since last gender-affirming surgery (8).

The letter writers question our conclusion that our study “lends support to the decision to provide gender-affirming surgeries to transgender individuals who seek them.” Their concerns about this conclusion can be summarized into three types:

**Concern 1:** The analysis focused on mental health treatment utilization during one specific year (i.e., 2015) rather than during a longer follow-up period, such as before and after provision of gender-affirming treatment.

**Concern 2:** The study did not employ an adequate comparison group.

**Concern 3:** The study did not sufficiently highlight the elevated mental health care needs of transgender individuals seeking gender-affirming care during the perioperative period.

Our study was motivated by two aims informed by the literature and the need for more knowledge in this field: first, to examine if transgender individuals seeking gender-affirming care have an increased risk of mental health treatment utilization compared with the general population; and second, to examine if mental health treatment utilization among transgender individuals who received gender-affirming care decreases as a function of number of years since receiving gender-affirming care.

In our article, we describe the background to our analytic decisions and discuss the limitations that our particular study design and analytic approach introduce. Many of the concerns raised by the letter writers are discussed at the conclusion of the article. In the article, we specifically call for further longitudinal studies that assess within-person changes in mental health treatment utilization before and after treatment. In the article, we also note that our approach was capable of ascertaining mental health only among those alive in 2015 and did not capture outcomes among the deceased. Several of the letter writers' concerns are drawn from assumptions about what our study methodology theoretically should have been or could have been but ultimately was not.

The letter writers suggest more ideal methodologies for identifying any causal impact of gender-affirming care on mental health treatment utilization, similar to what we wrote in our article. As outlined below, we join them in aspiring toward such methodologies capable of more rigorously establishing this impact. We also perform additional analyses permitted by our current data to start to move toward that goal.

### Our Analytic Strategy

There is a great need for higher-quality studies using more representative samples of transgender individuals seeking gender-affirming care to better understand this population's mental and physical health care needs and the effects of gender-affirming care. Much current evidence derives primarily from small studies with cross-sectional designs, nonprobability samples, and self-reported treatment exposures and mental health outcomes. Our study does not. Although it is not capable of overcoming all threats to validity, our study design represents an improvement over much previous research.

Ours is an observational study based on registry data regarding mental health treatment utilization among individuals

with a gender incongruence diagnosis. We focus on mental health treatment utilization during one specific year (the latest for which we had data), and we used the total Swedish population as a comparison group. First, to answer whether transgender individuals seeking gender-affirming care have an increased risk of mental health treatment utilization compared with the general population, we compared the prevalence of treatment for mood and anxiety disorders among those with and without a gender incongruence diagnosis among all individuals living in Sweden. Second, to answer whether odds of mental health treatment utilization among transgender individuals who received gender-affirming care are lower as a function of number of years since receiving gender-affirming care, we evaluated mental health treatment utilization in 2015 among those with a gender incongruence diagnosis as a function of time since the initiation of gender-affirming hormone treatment and the last gender-affirming surgical treatment.

As outlined below, although this design is capable of ruling out certain threats to validity (e.g., confounding by secular trends), it is incapable of ruling out others (e.g., loss to mortality).

### Responses to the Letters

**Response to concern 1.** The first concern is that our analysis focused on mental health treatment utilization during one specific year (i.e., 2015) rather than during a longer follow-up period, such as before and after provision of gender-affirming treatment. This decision was made to control for several important factors. First, the situation for transgender individuals has changed rapidly in the past 10–15 years. In Sweden, legislation affecting transgender individuals (e.g., removal of sterilization as a requirement for change of legal gender; increased protection of transgender individuals in hate-speech legislation) has improved at the same time that population attitudes have become more accepting (9, 10). Second, the proportion of individuals in the population treated for mental health problems has increased over time. Third, access to gender-affirming care has also increased over time. By restricting our outcome assessment period to one year, 2015, the most recent year for which we had data, we were able to remove the influence of these secular trends in transgender acceptance, visibility, and treatment utilization (both gender-affirming treatment and mental health treatment).

Although our chosen strategy addressed many of the problems of these secular effects, it has several drawbacks. Because we looked at mental health treatment utilization in one specific year, we could not follow individuals over time. Our analysis of time since last gender-affirming surgical treatment compared groups of individuals with varying lengths of time since their last treatment. It is possible that other factors, such as age and a changing proportion of individuals of different legal genders who have sought gender-affirming care over time, could influence these comparisons. Therefore, we controlled for those sociodemographic

factors in our analyses. Another drawback to using only one year of mental health treatment utilization data is that our analysis contains a very small number of suicide attempts and no information about previous attempts and completed suicides. Studies employing prospective cohort designs are needed to better understand suicidality within this group and its associations with gender-affirming care. Any conclusion regarding suicidality in our present study should be interpreted with this limitation in mind. This limitation is reported in our article.

*Response to concern 2.* The second concern is that our study design lacked an adequate comparison group. To answer whether transgender individuals seeking gender-affirming care have an increased risk of mental health treatment utilization compared with the general population, we used the total population without a gender incongruence diagnosis as a comparison group. Because the total population differs in significant ways from the group diagnosed with gender incongruence, we adjusted our analysis for all available sociodemographic variables (i.e., age, legal gender, education, income, urbanicity, and country of birth). An alternative way of testing this aim would be to create a comparison group matched on important demographic variables, which we have now done. Specifically, we now compare individuals diagnosed with gender incongruence with an equally sized group without such a diagnosis matched by age, legal gender, education, and country of birth. The results are presented in Tables S1 and S2 in the online supplement, and they indicate a similar pattern of results as reported in our article, with only a slightly reduced disparity in the odds of mental health treatment utilization when individuals diagnosed with gender incongruence are compared with matched control subjects (instead of with the full population without gender incongruence, as was done in the original analysis).

To determine if mental health treatment utilization among transgender individuals receiving gender-affirming care decreases as a function of number of years since receiving gender-affirming care, we did not use a comparison group but tested the association between both year since initiation of gender-affirming hormone treatment and year since last gender-affirming surgical treatment with mental health treatment utilization in 2015. As a reference, we included the proportion of the general population treated for mental health conditions in 2015 in Figure 1 of our article. We have added the proportion of the matched control subjects treated for mental health problems in 2015 to Figure S1 in the online supplement.

Like some of the letter writers suggest, we also considered using a stronger comparison group but found the options unsatisfactory, if not impossible. Perhaps the most obvious comparison would have been individuals with a gender incongruence diagnosis who had not received surgical treatment. This would be a strong comparison group if all individuals diagnosed with gender incongruence are, in fact, seeking gender-affirming surgical treatment. However, this is not the case. Some individuals diagnosed with gender

incongruence seek only gender-affirming hormonal treatment and not gender-affirming surgical treatment; others seek no treatment at all. The group diagnosed with gender incongruence not receiving surgery is a heterogeneous group, including those with no intention to seek surgery, that would be inappropriate as a comparison group for those receiving surgery. However, to be responsive to some of the letter writers' interest in comparing individuals with a gender incongruence diagnosis who received and did not receive gender-affirming surgery, we have created a matched group of individuals with a gender incongruence diagnosis who have not received surgery. These individuals were each matched to an individual with a gender incongruence diagnosis who had received gender-affirming surgery by age, legal gender, education, and country of birth. When comparing the mental health treatment outcomes between the two groups (Table 1), we found no significant difference in the prevalence of treatment for mood disorders and no significant difference in the prevalence of hospitalization after suicide attempt. However, individuals diagnosed with gender incongruence who had received gender-affirming surgery were more likely to be treated for anxiety disorders compared with individuals diagnosed with gender incongruence who had not received gender-affirming surgery. As reported in the article, the statistical test for hospitalization after suicide attempt must be interpreted with caution. As noted above, limited information can be drawn from this particular comparison.

Another comparison group could have involved individuals without a gender incongruence diagnosis undergoing a surgical treatment for which a thorough mental health assessment is required, as it is for gender-affirming surgery. However, we are unaware of any such surgical treatment. Such a comparison group would have, theoretically, enabled us to partially overcome two threats to the validity of our finding that odds of mental health treatment are lower as a function of time since final gender-affirming surgery. The first threat is that people are required to be screened for mental health problems before gender-affirming surgery and might therefore have particularly high odds of mental health treatment in the perioperative year because of their perhaps involuntary receipt of mental health services. These individuals might be less likely to voluntarily seek treatment for mental health problems with greater time since surgery. The second threat is that because we assessed only the mental health of individuals who were alive in 2015, individuals who died by suicide or migrated would not be included; greater time since last surgical treatment comes with greater time for suicide or migration to happen.

*Response to concern 3.* The third concern is that the study did not sufficiently highlight the elevated mental health care needs of transgender individuals seeking gender-affirming care during the perioperative period. The letter writers highlight this important finding of our study that we did not sufficiently emphasize originally. Specifically, regardless of the effect of gender-affirming care on mental health treatment

**TABLE 1. Mood- and anxiety-related health care visits, antidepressant and anxiolytic prescriptions, and hospitalization after suicide attempt in 2015 among individuals diagnosed with gender incongruence in Sweden between 2005 and 2015, by gender-affirmative surgery status**

2015 Treatment Outcome	Individuals Diagnosed With Gender Incongruence Who Have Received Gender-Affirmative Surgery (N=1,018)		Individuals Diagnosed With Gender Incongruence Who Have Not Received Gender-Affirmative Surgery (N=1,018) <sup>a</sup>		Analysis	
	N	%	N	%	Odds Ratio	95% CI
Psychiatric outpatient visits						
Any mood disorder	98	9.6	88	8.6	1.13	0.83–1.52
Any anxiety disorder	85	8.3	62	6.1	1.40	1.00–1.97
Prescribed medication						
Any antidepressant treatment	301	29.6	292	28.7	1.04	0.86–1.26
Any anxiolytic treatment	215	21.1	149	14.6	1.56	1.24–1.96
Inpatient visit (hospitalization after suicide attempt)	13	1.3	7	0.7	1.87	0.74–4.70

<sup>a</sup> Control group matched by age, gender, education, and country of birth.

utilization, our results show that the mental health care needs of this population are substantial in the year surrounding the last gender-affirming surgery. These results highlight the need for further research and clinical attention to be paid to the stressors and needed supports of this period (11).

In sum, the letter writers point out that although our study design addressed some threats to validity (e.g., confounding by secular trends), it introduced others (e.g., loss to mortality). While the design clearly establishes that individuals diagnosed with gender incongruence utilized more mental health care than the general population in 2015, especially during the perioperative period, like most extant research on the topic, the design is incapable of establishing a causal effect of gender-affirming care on mental health treatment utilization.

### Should the Concluding Message of Our Study Have Been More Moderate?

Our conclusion based on the findings at hand in the article, which used neither a prospective cohort design nor a randomized controlled trial design, was too strong. However, given the urgent need for more knowledge about the mental health of transgender individuals and the potential consequences of gender-affirming care, this large-scale observational study serves an important purpose and fills an important knowledge gap. Specifically, this study highlights the substantially increased risk of mental health problems among individuals diagnosed with gender incongruence, and in particular, among those in the process of receiving gender-affirming surgery. The study also lends support for expecting a reduction in mental health treatment as a function of time since completing such treatment, at least among those who are still living in Sweden.

We thank the letter writers for their attention to this important topic and, recognizing the importance of approaching this topic with triangulated, rigorous methodologies, look forward to further collaborative research using even higher-quality methodologies to move closer to establishing the causal impact of gender-affirming care on the well-being of the transgender population.

### REFERENCES

1. Anckarsäter H, Gillberg C: Methodological shortcomings undercut statement in support of gender-affirming surgery (letter). *Am J Psychiatry* 2020; 177:764–765
2. Van Mol A, Laidlaw MK, Grossman M, et al: Gender-affirmation surgery conclusion lacks evidence (letter). *Am J Psychiatry* 2020; 177:765–766
3. Curtis D: Study of transgender patients: conclusions are not supported by findings (letter). *Am J Psychiatry* 2020; 177:766
4. Malone WJ, Roman S: Calling into question whether gender-affirming surgery relieves psychological distress (letter). *Am J Psychiatry* 2020; 177:766–767
5. Landén M: The effect of gender-affirming treatment on psychiatric morbidity is still undecided (letter). *Am J Psychiatry* 2020; 177:767–768
6. Wold A: Gender-corrective surgery promoting mental health in persons with gender dysphoria not supported by data presented in article (letter). *Am J Psychiatry* 2020; 177:768
7. Ring A, Malone WJ: Confounding effects on mental health observations after sex reassignment surgery (letter). *Am J Psychiatry* 2020; 177:768–769
8. Bränström R, Pachankis JE: Reduction in mental health treatment utilization among transgender individuals after gender-affirming surgeries: a total population study. *Am J Psychiatry* 2020; 177:727–734
9. Flores AR, Park A: Polarized Progress: Social Acceptance of LGBT People in 141 Countries, 1981 to 2014. The Williams Institute, UCLA School of Law, Los Angeles, 2018. <https://williamsinstitute.law.ucla.edu/wp-content/uploads/Polarized-Progress-GAI-Mar-2018.pdf>
10. Public Health Agency of Sweden: Hälsan och hälsans beståndsdelar för transpersoner: en rapport om hälsoläget bland transpersoner i Sverige. Stockholm, 2015
11. Deutsch MB: Gender-affirming surgeries in the era of insurance coverage: developing a framework for psychosocial support and care navigation in the perioperative period. *J Health Care Poor Underserved* 2016; 27:386–391

Richard Bränström, Ph.D.  
John E. Pachankis, Ph.D.

Department of Clinical Neuroscience, Karolinska Institutet, Stockholm (Bränström); and Department of Social and Behavioral Sciences, Yale School of Public Health, New Haven, Conn. (Pachankis)

Send correspondence to Dr. Bränström ([richard.bränstrom@ki.se](mailto:richard.bränstrom@ki.se)).

The authors' disclosures accompany the original article.

Accepted May 22, 2020.

*Am J Psychiatry* 2020; 177:769–772; doi: 10.1176/appi.ajp.2020.20050599